Attorney Docket No.: C70361
U.S. Serial No. 09/762,022
Group Art Unit: 1744

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A toothbrush head having a bristle surface from which a cluster of bristles extends in a bristle direction, the head comprising means to direct incident radiation toward a surface of a tooth and means to collect emitted radiation from the surface of the tooth, wherein;

the means to direct incident radiation toward the surface of a tooth, or the means to collect emitted radiation from the surface of the tooth comprise one or more core within the toothbrush head made of a first plastic material which is transparent to the incident or emitted radiation, and in which radiation transmitted internally within the core is guided by internal reflection within the core, the first plastic material having a refractive index N^1, and a first sheath surrounding the core and comprising a monolithic body in which the bristles of the head are mounted, and which is made of a second plastic material which is transparent to the incident or emitted radiation, the second plastic material having a refractive index N^2, N^1 being greater than N^2, such that internal reflection occurs as a result of the difference in refractive index between N^1 and N^2, [~~and/or~~] or wherein the core is optionally surrounded by a second sheath which is of a reflective material which reflects the incident [~~and/or~~] or emitted radiation.

2. (Previously Presented) The toothbrush head according to claim 1 wherein the first and second plastic materials are transparent over the wavelength range 400 – 630nm.

3. (Cancelled)

4. (Previously Presented) The toothbrush head according to claim 1 wherein the reflective material is a metal.

5. (Previously Presented) The toothbrush head according to claim 1 wherein the head of the toothbrush is made of a monolithic body of the second plastic material and is coated with a reflective coating.

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6. (Cancelled)

7. (Previously Presented) The toothbrush head according to claim 1 wherein the first plastic material is a polymethylmethacrylate and the second plastic material is polyethyleneterephthalate.

8. (Previously Presented) The toothbrush head according to claim 1 wherein the core is a generally "L" shaped structure having a limb oriented in the generally longitudinal direction of the head and a limb oriented generally in the bristle direction and terminating in a surface which is substantially perpendicular to the bristle direction.

9. (Previously Presented) The toothbrush head according to claim 8 wherein the bend of the "L" between the limbs is curved or bevelled to present a surface at 45° to the limbs.

10. (Previously Presented) The toothbrush head according to claim 1 wherein the cross-sectional dimension of the core is 5-95% of the cross sectional width and/or thickness of the head.

11. (Previously Presented) The toothbrush head according to claim 1 wherein the core has a surface which is substantially perpendicular to the bristle direction, so that incident radiation passing along the core may emerge from the core through this surface and from thence be directed to the tooth surface and/or emitted radiation from the tooth surface may enter the core through this surface and may be directed through the core, and a layer of transparent head material is provided at this surface so that incident and emitted radiation passes through this transparent head material.

12. (Cancelled)

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13. (Cancelled)

14. (Previously Presented) The toothbrush head according to claim 1 wherein the bristle surface is provided with one or more bristle free areas which function as windows for radiation passing to and from the tooth surface to the toothbrush head.

15. (Currently Amended) The toothbrush head according to claim 1 [~~characterised by having~~] further comprising one or more lenses for radiation passing to and from the tooth surface to the toothbrush head which focus emitted radiation from the toothbrush head onto the tooth surface and/or which focus or collect emitted radiation from the tooth surface.

16. (Currently Amended) [~~The~~] A toothbrush having a head as claimed in claim 1.

17. (Previously Presented) An injection moulding process by which a toothbrush head as claimed in any one of the preceding claims is made, wherein the core is first made of the first plastic material, optionally a reflective metal layer is applied to this core, then the core is positioned in an injection mould cavity defining the shape of the monolithic body, and then the monolithic body is formed of the first second plastic material around the core by an injection moulding process.